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10/687,301	10/15/2003	Russell Perry	300110121-2	7924

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HEWLETT-PACKARD COMPANY
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EXAMINER

EHICHIOYA, FRED I

ART UNIT	PAPER NUMBER
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2162

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/687,301

Applicant(s)

PERRY, RUSSELL

Examiner

Fred I. Ehichioya

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Specification Objection

1. Applicant's arguments filed October 30, 2006 regarding the objection to the specification have been fully considered but they are not persuasive. Therefore, examiner maintains the objection to the specification of last Office Action.

Claim Objections

2. Amendment overcomes the objection to claims 4, 6, 7, 8, 9 and 12; therefore, claims objection of last Office Action is hereby withdrawn.

Claim Rejections - 35 USC § 101

3. Applicant's arguments filed October 30, 2006 regarding the rejection of claims 1, 12, and 19 - 22 under 35 U.S.C. 101 have been fully considered but they are not persuasive. Therefore, examiner maintains the rejection of claims 1, 12, and 19 - 22 under 35 U.S.C. 101 of last Office Action.

4. Applicant argues:

Regarding claims 1 – 22, applicant argues that Tatarinov does not disclose, teach, or suggest at least "associating a unique identifier with respective parsed nodes of the document which identifies, absolutely, the hierarchical position of the node in the document."

Examiner respectfully disagrees with the applicant. Firstly, examiner wishes to state that applicant's amendments fail to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification. "absolute" or "absolutely" is not described in the specification.

Secondly, Tatarinov discloses "associating a unique identifier with respective parsed nodes of the document (page 206, section 3.3: "the node in an XML document are assumed to have unique identifiers (IDs)") which identifies, absolutely, the hierarchical position of the node in the document (page 206 section 4.1: "each node is assigned a number that represents the node's absolute position in the document").

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1 - 22 are rejected under 35 U.S.C. 101 because:

Regarding claims 1, 19 and 22, these claims are directed to storing a hierarchical document in a relational database. The claimed subject matter lacks a practical application of judicial exception (law of nature, abstract idea, naturally occurring article/phenomenon) since it fails to produce a useful, concrete and tangible result. Specifically, the claimed subject matter does not produce a tangible result because the claimed subject matter fails to produce a result that is limited to having real world value rather than a result that may be interpreted to be abstract in nature as, for example, a thought, a computation, or manipulated data. More specifically, the claimed

subject matter provides for “storing the node with its identifier in a table of a relational database” and “an identifier field for storing an identifier associated with each respective node stored in the node field, wherein the identifier identifies, absolutely, the hierarchical position of the node in the document”. These produced results remain in the abstract and, thus, fail to achieve the required status of having real world value.

The claimed invention does not accomplish a “practical application” as forth in MPEP 2106 (II) (A).

Claims 2 – 11 depend from independent claim 1 and claims 13 - 18 depend from independent claim 12; these claims inherit the deficiencies of the independent claims 1 and 12 respectively. Therefore, claims 2 – 11 and 13 – 18 are rejected under 35 U.S.C. 101 for the reasons stated above.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 12, 19, 20, 21 and 22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 1, 12, 19, 20, 21 and 22 contain “absolute” or “absolutely” that is not described in the specification.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

8. Claims 1 – 22 are rejected under 35 U.S.C. 102(a) as being anticipated by NPL “Storing and querying ordered XML using a relational database system” by Igor Tatarinov et al (hereinafter “Tatarinov”).

Regarding claims 1 and 20, Tatarinov discloses a method of storing a hierarchical document in a relational database (page 204 – Title and Abstract: “store and query XML documents using relational database”; “An XML document can be viewed as a tree/hierarchy” – page 205, section 3.1, paragraph 1) comprising

(a) parsing a hierarchical document (page 214, section 7.8, paragraph 1: XML document has to be parsed”);

(b) associating a unique identifier with respective parsed nodes of the document (page 206, section 3.3: “the node in an XML document are assumed to have unique identifiers (IDs)”) which identifies, absolutely, the hierarchical position of the node in the

document (page 206 section 4.1: "each node is assigned a number that represents the node's absolute position in the document"); and

(c) storing the node with its identifier in a table of a relational database (page 207 section 5.1: "the Edge table is used to store an entire document. . . Each Edge tuple represents a node in the XML document tree").

Regarding claim 2, Tatarinov discloses wherein the identifiers are associated such that a predetermined ordering of the identifiers and associated nodes in the database produces a predetermined ordering of nodes (page 206 section 3.3: "Accordingly, the result of evaluating an XPath expression is an ordered set of node IDs").

Regarding claim 3, Tatarinov discloses wherein the predetermined ordering of the nodes is that produced by a depth first traversal of a tree representation of the hierarchical document (page 207 section 4.3: "each node is assigned a vector that represents the path from the document's root to the node. Each component of the path represents the local order of an ancestor node, as illustrated in Figure 1").

Regarding claim 4, Tatarinov discloses wherein the identifier includes a separate character position for each hierarchical level in the document which is traversed to reach the associated node in the hierarchical document (page 208 section 5.1.1: "*Local Order*: Since the relative position of a node among its siblings does not

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uniquely identify a node in a document, unique node IDs still need to be assigned (that do not have to follow document order). A new column needs to be added to represent the position of a node among its siblings (the sibling index of a node, sIndex): Edge(id, parent_id, sIndex, path_id, value)".

Regarding claim 5, Tatarinov discloses wherein a unique prefix character is used each time the number of nodes in a particular hierarchical level exceeds the unique characters in the identifier alphabet (page 211 section 6.2.2).

Regarding claims 6 and 13, Tatarinov discloses wherein at least one database table entry includes a document identifier which identifies the hierarchical document from which an node has been parsed (page 207 section 5.1, paragraph 2: "Each Edge tuple represents a node in the XML document tree. The id column corresponds to the node's ID and also serves as the primary key of the relation").

Regarding claim 7, Tatarinov discloses a wherein at least one database table entry includes a value field which records a value of the node in the table entry (page 207 section 5.1, paragraph 2, "value column is for text values of text nodes").

Regarding claims 8 and 15, Tatarinov discloses wherein at least one database table entry includes a type field which indicates a characteristic type of the node in the table entry from a predetermined set of types (page 207 section 5.1: "A single relation,

the Edge table is used to store an entire document. . . .Each Edge tuple represents a node in the XML document tree. The id column corresponds to the node's ID and also serves as the primary key of the relation").

Regarding claim 9, Tatarinov discloses wherein the hierarchical document is an XML document (page 206 section 3.1, paragraph 1: "An XML document can be viewed as a tree/hierarchy").

Regarding claim 10, Tatarinov discloses wherein at least one database table entry includes a type field which indicates a characteristic type of the node in the table entry from a predetermined set of types and wherein the set of types includes text node, element node, attribute node and/or processing instruction (page 207 section 5.1 paragraph 2: "values is used for text values of text nodes").

Regarding claim 11, Tatarinov discloses wherein the database table includes YPath and ZPath indexes pointing to predetermined respective entries in respective node and ZPath database tables (Applicants disclose on the specification page 5, lines 11 – 13 "The NodePath refers to a unique element node in XML document. The NodePath can be split into two parts A/B/C/D and m/m/o/p, referred to as the YPath and ZPath respectively". Therefore, Examiner interprets "XPath expressions" disclosed on page 208 and Table 2 of Tatarinov as YPath and Zpath).

Regarding claim 12, Tatarinov discloses a relational database comprising a table having an node field for storing an node of a hierarchical document (page 206 section 4, paragraph 1: "In order to store and query shredded XML documents using a relational database system, we need some mechanism to capture document order in the relational data model. This is accomplished by encoding each node's position in an XML document as a data value");

an identifier field for storing an identifier associated with each respective node stored in the node field (page 206 section 3.3: "the nodes in an input XML document are assumed to have unique identifiers (IDs)"), wherein the identifier identifies, absolutely, the hierarchical position of the node in the document (page 206 section 4.1: "each node is assigned a number that represents the node's absolute position in the document").

Regarding claim 14, Tatarinov discloses wherein at least one database table entry includes a value field for recording a value of an node in the respective table entry (page 206, section 4.1 paragraph 1 : "each node is assigned a number that represents the node's absolute position in the document").

Regarding claim 16, Tatarinov discloses wherein the database table includes node and ZPath indexes referencing respective entries in respective node and ZPath database tables in the database (page 207 section 5.1, paragraph 2: "Each Edge tuple represents a node in the XML document tree. The id column corresponds to the node's ID and also serves as the primary key of the relation. The

parent_id column provides a "link" (i.e., foreign key) to the node's parent. The name column is used to store the tag name of element nodes, the value column is used for text values of text nodes").

Regarding claim 17, Tatarinov discloses wherein the YPath table includes fields for storing XPath element names and document Ids (page 207 section 5.1 paragraph 2: The parent_id column . . . tags name of element codes").

Regarding claim 18, Tatarinov discloses wherein the ZPath table includes fields for storing XPath integer indexes and document Ids (page 205 section 3.2.1, paragraph 5: Also if predicate . . . the position of node selected").

Regarding claims 19 and 22, Tatarinov discloses a method of writing a hierarchical document comprising:

(a) reading data (page 205 section 3.2.1: examiner interprets "navigating" as "reading data") from a relational database which is representative of nodes of a hierarchical document (page 206 section 4, paragraph 1: 'XML documents using a relational database'),

(b) generating predetermined software events for respective read nodes (fig. 3: "XPath-toSQLtranslation algorithm" is interpreted as the "predetermined software events"), and

(c) passing the software events to a content handler which is arranged to translate each software event into a written node of the hierarchical document (page 208 section 6.1, paragraph 2: "As shown, the algorithm in Figure 3 initially generates the SQL fragment to select the root elements of the stored XML documents (lines 4-6). Then, using the root elements as the initial context nodes, the algorithm generates the SQL fragments for each "step" of the XPath query being translated in order to produce new context nodes (line 8). The context nodes produced by the last step constitute the query result (lines 10-11)"), each written node being associated with a unique identifier which identifies, absolutely, the hierarchical position of the node in the document (page 206 section 4.1: "each node is assigned a number that represents the node's absolute position in the document")

Regarding claim 21, Tatarinov discloses a computer readable medium carrying a program which when executed on a computer causes storing of a hierarchical document in a relational database by:

(a) receiving software events (page 207 section 7.2: "The rest of the queries were chosen to test key aspects of order-based functionality in XPath and XQuery. The test queries were translated to SQL using the algorithm described in Section 6") representing respective parsed nodes of a hierarchical document (page 214, section 7.8, paragraph 1: XML document has to be parsed"),

(b) associating a unique identifier with respective parsed nodes of the document (page 206, section 3.3: "the node in an XML document are assumed to have unique

identifiers (IDs)") which identifies, absolutely, the hierarchical position of the node in the document (page 206 section 4.1: "each node is assigned a number that represents the node's absolute position in the document"); and

(c) storing the node with its identifier in a table of a relational database (page 207 section 5.1: "the Edge table is used to store an entire document. . . Each Edge tuple represents a node in the XML document tree").

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred I. Ehichioya whose telephone number is 571-272-4034. The examiner can normally be reached on M - F 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Breene can be reached on 571-272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Fred I. Ehichioya
Patent Examiner
Art Unit 2162



January 8, 2007


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